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EXAMINER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 07-01)

Offic Action Summary	**Application No.** 09/648,525	**Applicant(s)** DAVIS ET AL.	
	Examiner Alessandro V. Amari	**Art Unit** 2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-69 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-69 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .

4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1-21, 32-36, 37, 38, 43-48 and 49-57 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 1, 32 and 37 are rejected because the specification does not describe or define the term "amplitude profile".

3. Claims 38, 41, 48, 57 and 69 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 38, 41, 48, 57 and 69 are rejected because the specification makes no mention of the dimensions claimed nor cites the criticality of said dimensions.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-6, 8-9, 11, 22, 28-30, 32-34, 36, 39, 42-44, 58-62, 67 and 68 are rejected under 35 U.S.C. 102(b) as being anticipated by Li U.S. Patent 5,841,918.

In regard to claims 1 and 32, Li discloses (see Figure 1) a tunable optical filter or a method for selectively filtering an optical wavelength band from an input light comprising: providing a first optical element including a first reflective element (14) for receiving light and reflecting a first wavelength band of the light centered at a first reflection wavelength, the first reflective element characterized by a first filter function as described in column 3, lines 45-54; and providing a second optical element, optically connected to the first optical element to receive the reflected first wavelength band of the light, including a second reflective element (16) for reflecting a second wavelength band of the light centered at a second reflection wavelength, the second reflective element characterized by a second filter function whereby the amplitude profile of the first filter function is different than the amplitude profile of the second filter function as shown in Figures 2a and 2b; and the first wavelength band and the second wavelength band overlap spectrally as shown in Figures 2a and 2b and as described in column 4, lines 1-13.

Regarding claim 2, Li discloses that one of the first and second optical elements is tunable to change the corresponding first or second reflection wavelength as described in column 3, lines 58-67 and column 4, lines 1-18.

Regarding claim 3, Li discloses that both of the first and second optical elements is tunable to change each of the first and second reflection wavelengths as described in column 3, lines 58-67 and column 4, lines 1-18.

Regarding claim 4, Li discloses (see Figure 1) an optical directing device (12) optically connected to the first and second optical elements; the optical directing device directing the light to the first reflective element, directing the first wavelength band reflected from the first reflective element to the second reflective element, and directing the second wavelength band reflected from the second reflective element to the output port of the optical directing device as shown in Figure 1 and as described in column 3, lines 41-59.

Regarding claim 5, Li discloses that the optical directing device comprises at least one circulator as described in column 3, line 16.

Regarding claim 6, Li discloses (see Figure 6) that the circulator receives the light at a first port of the circulator, directs the light to the first reflective element through a second port of the circulator, receives the first wavelength band at the second port, directs the first wavelength band to the second reflective element through a third port of the circulator, receives the second wavelength band at the third port, and directs the second wavelength band to a fourth port of the circulator as described in column5, lines 40-61.

Regarding claims 8, Li discloses that the first reflection wavelength and the second reflection wavelength are substantially aligned to reflect a portion of the aligned wavelength bands to an output port as described in column 4, lines 1-18.

Regarding claim 9, Li discloses that one of the first and second filter functions comprises one of a Gaussian, rectangular and ramped profile as shown in Figure 2a, 2b.

Regarding claim 11 and 36, Li discloses that the first reflection wavelength is offset a predetermined spacing from the second reflection wavelength or wherein tuning one of the first and second reflective elements comprises offsetting a first reflection wavelength and a second reflection wavelength by a predetermined spacing as shown in Figures 2a-2c and as described in column 4, lines 1-13.

In regard to claim 22, Li discloses (see Figure 1) a tunable optical filter comprising a tunable optical waveguide for receiving light, the optical waveguide comprising a first reflective element (12, 14) for receiving light and reflecting a first wavelength band of light centered at a first reflection wavelength, as shown in Figure 2a, the first reflective element characterized by a first filter function as described in column 3, lines 55-64 and as shown in Figure 2a, and a second reflective element (12, 16), optically connected to the first reflective element to receive the reflected first wavelength band of light, for reflecting a second wavelength band of the light centered at a second reflection wavelength, the second reflective element characterized by a second filter function; whereby the first wavelength band and the second wavelength band overlap spectrally as shown in Figure 2c.

Regarding claim 28, Li discloses that the first reflection wavelength and the second reflection wavelength are substantially aligned to reflect a portion of the aligned wavelength bands to an output port as described in column 4, lines 1-18.

Regarding claim 29, Li discloses that the first and second reflective elements have different filter functions as described in column 4, lines 1-18.

Regarding claim 30, Li discloses that the first reflection wavelength is offset a predetermined spacing from the second reflection wavelength or wherein tuning one of the first and second reflective elements comprises offsetting a first reflection wavelength and a second reflection wavelength by a predetermined spacing as shown in Figures 2a-2c and as described in column 4, lines 1-13.

Regarding claim 33, Li discloses that tuning one of the first and second reflective elements includes compressing the one of the first and second optical elements as described in column 3, lines 19-24.

Regarding claim 34, Li discloses that tuning one of the first and second reflective elements comprises substantially aligning a first reflection wavelength and the second reflection wavelength as described in column 4, lines 1-18.

Regarding claim 39, Li discloses wherein one of the first and second filter functions comprises one of a Gaussian, rectangular and ramped profile as shown in Figures 2a and 2b.

Regarding claim 42, Li discloses that the amplitude profile of the first filter function is different than the amplitude profile of the second filter function as shown in Figures 2a and 2b.

Regarding claim 43, Li discloses tuning the other one of the first and second reflective elements to overlap spectrally the first reflection wavelength band and the second reflection wavelength band as shown in Figure 2c.

Regarding claim 44, Li discloses that one of the first and second filter functions comprises one of a Gaussian, rectangular and ramped profile as shown in Figures 2a and 2b.

In regard to claim 58, Li discloses (see Figure 1) an optical filter comprising: a first optical waveguide including a first reflective element (14) for receiving light and reflecting a first wavelength band of the light centered at a first reflection wavelength as shown in Figure 2a, the first reflective element characterized by a first filter function as described in column 3, lines 45-54; and a second optical waveguide, optically connected to the first optical element to receive the reflected first wavelength band of the light, including a second reflective element (16) for reflecting a second wavelength band of the light centered at a second reflection wavelength, the second reflective element characterized by a second filter function as described in column 3, lines 58-67; whereby the first reflection wavelength and the second reflection wavelength are substantially aligned to reflect a portion of the aligned wavelength bands as shown in Figure 2c.

Regarding claim 59, Li discloses that one of the first and second optical waveguides is tunable to change the corresponding first or second reflection wavelength as described in column 3, lines 58-67 and column 4, lines 1-18.

Regarding claim 60, Li discloses that both of the first and second optical waveguides is tunable to change each of the respective first and second reflection wavelengths as described in column 3, lines 58-67 and column 4, lines 1-18.

Regarding claim 61, Li discloses an optical directing device (12) optically coupled to the first and second optical waveguides; the optical directing device directing the light to the first reflective element, directing the first wavelength band reflected from the first reflective element to the second reflective element, and directing the second wavelength band reflected from the second reflective element to the output port of the optical directing device as shown in Figure 1 and as described in column 3, lines 41-59.

Regarding claim 62, Li discloses that one of the first and second filter functions comprises one of a Gaussian, rectangular and ramped profile as shown in Figures 2a and 2b.

Regarding claim 67, Li discloses a compression device that axially compresses at least one of the first and second tunable optical waveguides, wherein at least one of the respective first and second reflective elements is disposed along an axial direction of the respective first and second tunable element as described in column 3, lines 19-40.

Regarding claim 68, Li discloses that the first and second reflective waveguides have different filter functions as described in column 3, lines 45-67 and as shown in Figures 2a and 2b.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Li U.S. Patent 5,841,918 in view of Kringlebotn et al. U.S. Patent 6,097,487.

Regarding claim 7, Li teaches the invention as set forth above but does not teach that said optical directing device comprises an optical coupler. Kringlebotn et al. teaches the optical directing device comprises an optical coupler (4) as shown in Figure 5 and as described in column 5, lines 52-67 and column 6, lines 1-10. It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize couplers as taught by Kringlebotn et al. in the optical filter of Li in order to optically direct the signals in the filter device.

8. Claims 10, 35, 40, 52 and 63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li U.S. Patent 5,841,918 in view of Kewitsch et al. U.S. Patent 6,236,782.

Regarding claims 10, 35, 40, 52 and 63, Li teaches the invention as set forth above but does not teach that one of the first and second reflective elements is fully apodized and the other of the first and second reflective elements is partially apodized. Kewitsch et al. teaches that one of the first and second reflective elements is fully apodized and the other of the first and second reflective elements is partially apodized as described in column 10, lines 39-67 and column 11, lines 1-10. It would have been obvious to one having ordinary skill in the art at the time the invention was made to apodize the reflective elements of Li as taught by Kewitsch et al. in order to reduce grating sidelobes and eliminate adjacent channel crosstalk.

9. Claims 12-16, 18, 23-27, 37, 38, 41, 45-51, 53-57, 64-66, and 69 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li U.S. Patent 5,841,918 in view of Fernald et al. U.S. Patent 6,229,827.

Regarding claims 12-16, 18, and 23-27, 45-48, 64-66 and 69, Li teaches the invention as set forth above.

In regard to claim 25, Li discloses (see Figure 1) an optical directing device (12) optically connected to the first and second tunable optical elements; the optical directing device directing the light to the first reflective element, directing the first wavelength band reflected from the first reflective element to the second reflective element, and directing the second wavelength band reflected from the second reflective element to the output port of the optical directing device as shown in Figure 1 and as described in column 3, lines 41-59.

Also, in regard to claim 26, Li discloses that the optical directing device comprises at least one circulator (112) as shown in Figure 6.

Regarding claim 37, Li teaches (see Figure 1) a compression-tuned optical filter comprising: a first optical element including a first reflective element (14) for receiving light and reflecting a first wavelength band of the light centered at a first reflection wavelength as described in column 3, lines 45-54; and a second optical element, optically connected to the first optical element to receive the reflected first wavelength band of the light, including a second reflective element (16) for reflecting a second wavelength band of the light centered at a second reflection wavelength, wherein the amplitude profile of the first filter function is different than the amplitude profile of the

second filter function, and the first wavelength band and the second wavelength band overlap spectrally as shown in Figures 2a-2c and as described in column 4, lines 1-13.

Regarding claim 49, Li discloses that both of the first and second optical elements is tunable to change each of the respective first and second reflection wavelengths as described in column 3, lines 58-67 and column 4, lines 1-18.

Regarding claim 50, Li discloses that the first reflection wavelength and the second reflection wavelength are substantially aligned to reflect a portion of the aligned wavelength bands to an output port as described in column 3, lines 58-67 and column 4, lines 1-18 and as shown in Figure 1.

Regarding claim 51, Li discloses that one of the first and second filter functions comprises one of a Gaussian, rectangular and ramped profile as shown in Figure 2a and 2b.

Regarding claim 53, Li discloses that the first reflection wavelength is offset a predetermined spacing from the second reflection wavelength as shown in Figures 2a-2c.

However, Li does not teach that at least one of the first and second tunable optical elements have an outer cladding and an inner core disposed therein, wherein the first reflective element comprises a first grating disposed in a longitudinal direction of the inner core of the first optical element, and the second reflective element comprises a second grating disposed in a longitudinal direction of the inner core of the second tunable optical element nor that at least one of the first and second optical elements comprises: an optical fiber, having a reflective element written therein; and a tube,

having the optical fiber and the reflective element encased therein along a longitudinal axis of the tube, the tube being fused to at least a portion of the fiber nor that at least one of the first and second optical elements has an outer transverse dimension of at least 0.3mm and comprises a substantially homogeneous material. Li does not disclose a compressing device for compressing simultaneously and axially the first and second tunable optical elements, wherein each of the first and second reflective elements are disposed along an axial direction of each respective first and second tunable element nor a straining device for tensioning axially the first optical element to tune the first reflective element wherein the first reflective element is disposed along an axial direction of the first optical element.

Regarding claims 12, 23 and 45, Fernald et al. teaches that at least one of the first and second tunable optical elements have an outer cladding and an inner core disposed therein, wherein the first reflective element comprises a first grating disposed in a longitudinal direction of the inner core of the first optical element, and the second reflective element comprises a second grating disposed in a longitudinal direction of the inner core of the second tunable optical element as shown in Figure 1 and as described in column 3, lines 47-63.

Regarding claim 13, Fernald et al. also teaches that (see Figure 1) at least one of the first and second optical elements comprises: an optical fiber (10), having a reflective element (12) written therein; and a tube (20), having the optical fiber and the reflective element encased therein along a longitudinal axis of the tube, the tube being fused to at least a portion of the fiber as described in column 4, lines 23-25.

Regarding claims 14, 24 and 46, Fernald et al. also teaches that at least one of the first and second optical elements has an outer transverse dimension of at least 0.3mm as described in column 1, lines 60-61.

Regarding claim 15, Fernald et al. teaches that at least one of the first and second optical elements is an optical fiber as described in column 3, lines 47-51.

Regarding claim 25, Fernald et al. teaches that the tunable optical elements comprise first and second inner cores as shown in Figure 1 and as described in column 3, lines 47-67.

Regarding claims 16 and 27, Fernald et al. also discloses a compressing device for compressing simultaneously and axially the first and second tunable optical elements, wherein each of the first and second reflective elements are disposed along an axial direction of each respective first and second tunable element as described in column 1, lines 57-67 and column 2, lines 1-3 and lines 42-44.

Regarding claim 18, Fernald et al. teaches a straining device for tensioning axially the first optical element to tune the first reflective element, wherein the first reflective element is disposed along an axial direction of the first optical element as disclosed in column 2, lines 1-3.

Regarding claims 38, 41, 48, 57 and 69, Fernald et al. teach that said outer transverse dimension is greater than the dimension selected from the group consisting of 0.4 mm, 0.5 mm, 0.6 mm, 0.7 mm, 0.8 mm, 1.0 mm, 1.2 mm, 1.4 mm, 1.6 mm, 1.8 mm, 2.0 mm, 2.1 mm, 2.3 mm, 2.5 mm, 2.7 mm, 2.9 mm, 3.0 mm, 3.3 mm, 3.6 mm, 3.9

mm, 4.0 mm, 4.2 mm, 4.5 mm, 4.7 mm and 5.0 mm as described in column 7, 25-34 and column 12, lines 22-25.

In regard to claim 37, Fernald et al. teaches that at least one of the first and second optical element has outer dimensions along perpendicular axial and transverse directions, the outer dimension being at least 0.3 mm along said transverse direction as described in column 1, lines 60-61, at least a portion of the respective first or second tunable element having a transverse cross-section which is contiguous and comprises a substantially homogeneous material as described in column 1, lines 65-67; and the respective first or second reflective element being axially strain compressed so as to change respective first or second reflection wavelength without buckling the respective first or second tunable element in the transverse direction as described in column 2, lines 1-3.

Regarding claim 45, Fernald et al. teach that at least one of the first and second optical elements have an outer cladding and an inner core disposed therein, wherein the at least one of the first and second reflective element comprises a grating disposed in a longitudinal direction of the inner core as shown in Figure 1 and as described in column 3, lines 47-63.

Regarding claim 46, Fernald et al. teach that at least one of the first and second optical elements is an optical waveguide having an outer transverse dimension of at least 0.3 mm as described in column 1, lines 60-61.

Regarding claim 47, Fernald et al. teach that at least one of the first and second optical elements is an optical fiber as described in column 3, lines 47-63.

Regarding claim 54, Fernald et al. teach that at least one of the first and second optical elements have an outer cladding and an inner core disposed therein, wherein the at least one of the first and second reflective element comprises a grating disposed in a longitudinal direction of the inner core as shown in Figure 1 and as described in column 3, lines 47-63.

Regarding claim 55, Fernald et al. teach that at least one of the first and second optical elements is an optical waveguide having an outer transverse dimension of at least 0.3 mm as described in column 1, lines 60-61.

Regarding claim 56, Fernald et al. teach a compression device that axially compresses at least one of the first and second tunable optical elements, wherein at least one of the respective first and second reflective elements is disposed along an axial direction of the respective first and second tunable element as described in column 1, lines 50-67 and column 2, lines 1-56.

Regarding claim 64, Fernald et al. teach that at least one of the first and second optical elements have an outer cladding and an inner core disposed therein, wherein the at least one of the first and second reflective element comprises a grating disposed in a longitudinal direction of the inner core as shown in Figure 1 and as described in column 3, lines 47-63.

Regarding claim 65, Fernald et al. teach that at least one of the first and second optical elements is an optical waveguide having an outer transverse dimension of at least 0.3 mm as described in column 1, lines 60-61.

Regarding claim 66, Fernald et al. teach that at least one of the first and second optical elements is an optical fiber as described in column 3, lines 47-63.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the compression tuned grating as taught by Fernald et al. in the optical filter of Li in order to tune the filter.

10. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Li U.S. Patent 5,841,918 in view of Fernald et al. U.S. Patent 6,229,827.

Regarding claim 17, Li in view of Fernald et al. discloses the claimed invention except for a first compressing device for compressing axially the first tunable optical element to tune the first reflective element, wherein the first reflective element is written in the longitudinal direction in the first tunable optical element; and a second compressing device for compressing axially the second tunable optical element to tune the second reflective element, wherein the second reflective element is written in the longitudinal direction in the second tunable optical element. It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize first and second compressing elements to tune each reflective element, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.,* 193 USPQ 8.

11. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Li U.S. Patent 5,841,918 in view of Morey et al. U.S. Patent 5,007,705.

Regarding claim 19, Li teaches the invention as set forth above but does not further teach a heating element for varying the temperature of the first optical element to

tune the first reflective element to reflect the selected first wavelength band. Morey et al. teaches a heating element for varying the temperature of the first optical element to tune the first reflective element to reflect the selected first wavelength band as described in column 4, lines 1-8. It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the heating element of Morey et al. in the optical filter of Li in order to tune the filter.

12. Claims 20, 21, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li U.S. Patent 5,841,918 in view of Putnam et al. U.S. Patent 6,310,990.

Regarding claims 20, 21 and 31, Li teaches the invention as set forth above but does not further teach a first compressing device for axially compressing at least the first tunable optical element to tune the first reflective element, responsive to a displacement signal, wherein the first reflective element is disposed axially along the first tunable element; and a displacement sensor, responsive to the compression of the first tunable optical element, for providing the displacement signal indicative of the change in the displacement of the first tunable optical element or wherein the displacement sensor includes a capacitance sensor coupled to the first tunable optical element for measuring the change in the capacitance that depends on the change in the displacement of the first tunable optical element. Putnam et al. does teach (see Figure 2) a first compressing device (50) for axially compressing at least the first tunable optical element to tune the first reflective element, responsive to a displacement signal, wherein the first reflective element is disposed axially along the first tunable element as

shown in Figure 1; and a displacement sensor (24), responsive to the compression of the first tunable optical element, for providing the displacement signal indicative of the change in the displacement of the first tunable optical element as described in column 5, lines 51-67 and column 6, lines 1-6 or wherein the displacement sensor includes a capacitance sensor (72, 74) coupled to the first tunable optical element for measuring the change in the capacitance that depends on the change in the displacement of the first tunable optical element as described in column 6, lines 1-6. It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the optical structure as taught by Putnam et al. in the optical filter system of Li in order to provide feedback control for the tuning of the optical filter.

Response to Arguments

13. Applicant's arguments filed 16 July 2002 have been fully considered but they are not persuasive.

The Applicant argues that Li does not teach or suggest varying the amplitude profile of one of the filter functions to provide a desired shape of the overall filter function of the optical filter as claimed.

In response to this argument, the Examiner would first like to point out that the Applicant does not define or describe the term "amplitude profile" in the specification. Secondly, the Applicant's attention is directed to Figures 2a and 2b of Li, which show a graph of wavelength versus Power or amplitude R for the two different filters (14 and 16). A profile is defined as "a set of data often in graphic form portraying the significant features of something" (Merriam-Webster's Collegiate Dictionary, Tenth ed., 1999).

Therefore, the figures clearly show a set of data portraying the significant features of amplitude versus wavelength and the amplitude profile of the first filter function (figure 2a) is certainly different than the amplitude profile (figure 2b) of the second filter function.

The Applicant further argues that Li does not teach or suggest an optical filter having an optical waveguide that includes a first and second reflective element.

In response to this argument, the Applicant's attention is directed to Figure 1 of Li, which shows an optical filter wherein the optical circulator (12), and optical filters (14, 16) are coupled together and therefore continuous, comprising an optical waveguide.

Conclusion

14. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alessandro V. Amari whose telephone number is (703)

306-0533. The examiner can normally be reached on Monday-Friday 8:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cassandra Spyrou can be reached on (703) 308-1687. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

ava ava
October 4, 2002

Cassandra Spyrou
Supervisory Patent Examiner
Technology Center 2800